COMMENTS ON MAY 2009 ADMINISTRATIVE DRAFT ANTIDEGRADATION ANALYSIS (ADA) FOR PROPOSED WASTEWATER TREAMENT PLANT DISCHARGE MODIFICATION

Applicable Water Quality Objectives

1. The 2006 Bay Delta Water Quality Plan water quality objectives for electrical conductivity (EC) at the Emmaton monitoring station and chloride at Contra Costa County (CCC) Pump Plant (PP) #1 should be included in Table 3-2. In addition, lacking site-specific studies for locations other than above, screening concentrations of 700 µmhos/cm EC; 450 mg/L TDS and 106 mg/L for chloride based on the Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985) should be included in Table 3-2.

2. The range for pH, temperature and hardness used to determine appropriate water quality objectives should be the 0.01^{th} percentile and the 99.9^{th} percentile, not the 5^{th} percentile and 95^{th} percentile. Please add these percentiles.

3. Footnote #5 in table 3-2 refers to Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). There does not appear to be any item footnoted in the table. Please explain.

Environmental Setting

4. Although there will not be any structural changes to the emergency storage basins (ESBs), the frequency of diversions and storage time is expected increase due to the increased effluent discharge. What is the projected increased frequency of diversions to the ESBs and length of time that wastewater will be stored in the ESBs?

5. Include the existing groundwater quality conditions in the section on Environmental Setting so groundwater impacts can be assessed and explain why the District does or does not expect existing and expanded operations to impact groundwater quality.

6. The Green Sturgeon is a threatened species; please add them to Section 4.5.1.

7. Table 4-7 – Projected 2030 Median Concentrations in the Sacramento River at Hood – shows the current total organic carbon (TOC) of the Sacramento River at Hood as 2.0 mg/L however the Municipal Water Quality Investigation (MWQI) database shows the current mean concentration as 2.1 m/L. Please explain the reason for a reduction in TOC with an increase in flow and increased urbanization.

Assessment of Water Quality Impacts

8. Please include information on the following constituents where it has been determined that the discharge has a reasonable potential to cause or contribute to an instream exceedance of the applicable water quality objectives (reasonable potential): carbon tetrachloride, pentachlorophenol, dibenzo(a,h,)anthracene, 1,2-diphenylhydrazine, methyl-tert-butyl ether, and chlorine residual. Also add iron and manganese to the ADA. Add these constituents to tables 3-2, 5-1 and 5-2. We understand that these constituents have been detected less than ten percent in either the effluent or receiving water and can not be modeled. However, constituents with reasonable potential need to be addressed in the Antidegradation Analysis (ADA).

9. Table 5-5 and 5-6 show the percent effluent at several far-field locations. For most of the locations the mean and 50th percentiles are very similar, which is to be expected. However, for the San Joaquin River at the Stockton monitoring station the mean and 50th percentile are substantially different. Is there an explanation for this difference?

10. Since the Category 3 constituents include bioaccumulative and drinking water constituents, the far-field impacts need to be identified if ambient concentrations are available.

11. In Table 5-1, selenium should be identified as bioaccumulative.

12. The ADA must consider the increase in mass emissions in the discharge in addition to the increased constituent concentrations in the receiving water.

13. There are no data for dissolved oxygen at R-1 in Table 5-2. Please include the dissolved oxygen concentration data and statistics at R-1.

14. Add as an appendix the *Low Dissolved Oxygen Prevention Assessment*. According to the DO assessment, ammonia can be reduced through source control for summer months, but not during the winter. The ADA suggests ammonia source control is the option for increasing the dissolved oxygen only in summer. Why not continue source control during the winter? It is likely that the operational changes would be considered best practicable treatment or control. Please provide additional information regarding the proposed operational changes, such as, the specifics on how ammonia will be reduced in summer and by how much.

15. The MWQI database shows the current winter ammonia median concentration as 0.4 mg/L at Hood while the model predicts the winter median to be 0.24 mg/L as shown in Table 3-6 (in the Technical Memorandum: Near-Field and Far-Field Dynamic Modeling Results for the Sacramento Regional Wastewater Treatment

Plant at a Discharge Rate of 154 mgd) at a discharge of 154 mgd. These concentrations should be similar, please explain the difference.

16. The mean summer effluent ammonia concentration is missing from Table 5-2. What mean value is used for the dynamic model for summer ammonia?

17. The model predicts that the 99.91th percentile total phosphorus decreases from a discharge of 181 mgd to 218 mgd (Table 5-46). Furthermore, the median phosphorus measured at Hood under current conditions is 0.09 mg/L yet the model predicts the median phosphorus at 181 mgd to be 0.08 mgd. Please explain why total phosphorus is not predicted to increase as the effluent flow increases.

18. An assumption is made in the ADA that aquatic life is repelled by the discharge or floating organisms pass through the 700 ft mixing zone within minutes. However, the areas around the diffuser are known to be popular for fishing. Therefore, some aquatic life may be attracted to the discharge and stay in the vicinity of the discharge for long periods of time. If this is the case, do any of the analyses change?

19. The impacts described in the ADA may be under estimated for nitrosodimethylamine (NDMA). The ADA states that NDMA is not a concern because of "infrequent, low level discharge of the compound….". This conclusion is based on the numerous non-detects however, the detection levels are greater than the human health criteria. According to the annual pretreatment reports, NDMA is frequently detected in the effluent when the detection level is 0.01 µg/L or lower and has been measured in the effluent at concentrations over sixty times the human health criterion. The water quality impacts from NDMA must be addressed in the ADA in more in detail.

20. Since January 2008, SRWTP effluent has exceeded the acute toxicity limitations 15 times. The acute toxicity is demonstrated in the effluent with 11 violations of the median result of 90% survival of any three consecutive flow through bioassays and 4 violations of the less than 70% survival of any one bioassay in 2008. This information needs to be disclosed in the ADA and the opinion stated in the ADA that the February and March 2008 toxicity incidents are episodic and uncharacteristic of SRWTP effluent may not be accurate. Although conducting the acute bioassays using 100% effluent is conservative due to the available dilution in the river, fathead minnows are much hardier (five times) than salmonids and recent studies found resident aquatic species of the Delta are more sensitive than salmonids. Recent acute toxicity tests for ammonia in the Delta and in SRWTP effluent found unknown toxicity in the SRWTP effluent. Update information on acute toxicity accordingly.

21. Pyrethroids must be addressed in the acute aquatic toxicity section. Dr. Donald Weston's findings indicate that pyrethroids were measured in every sample from

SRCSD. Although the results were not always definitive, in general pyrethroids were a significant cause of toxicity in the effluent.

22. Table 5-187 and table 5-188 characterize the incremental increase of specific constituents due to the expanded SRWTP. These characterizations are described as negligible, moderate or slight increases or decreases. What distinguishes a slight, negligible or moderate increase? For example, total organic carbon at Hood shows a 2% increase and is listed as slight increase and phosphorus at Hood increases 11% and is listed as slight. How are these characterizations made?

Assessment of Socioeconomic Considerations

23. Document capital, O & M costs and annualized data for the "no net increase" alternative. Please submit the 2007 Carollo Engineers "Technical Memorandum: Update of estimated project costs for the SRWTP 2020 Master Plan advanced treatment alternatives" and the 2009 Carollo Engineers "Technical memorandum: Advanced treatment alternatives for the Sacramento Regional Wastewater Treatment Plant".

24. Please provide more detail and justification for using reverse osmosis (RO) and ozone/hydrogen peroxide in the treatment train. If the purpose of RO is to remove increased salt loadings, please provide documentation that source control can not eliminate this increase. By substituting UV for chlorination/dechlorination a significant salt reduction would occur and without the costs of the expensive RO, brine treatment and disposal. What are the cost savings and environmental benefits of using less chlorine and sulfur dioxide if UV is used for disinfection? Please justify the use of ozone/hydrogen peroxide. What additional reductions in constituent mass emissions will ozone/hydrogen peroxide provide over microfiltration that requires its use as a treatment process?